



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

DECEMBER 14 1979

Docket No. 50-338

Mr. W. L. Proffitt  
Senior Vice President - Power  
Operations  
Virginia Electric and Power Company  
Post Office Box 26666  
Richmond, Virginia 23261

Dear Mr. Proffitt:

Subject: Request for Information for North Anna Power Station, Unit No. 1  
Auxiliary Feedwater System

Our review of your November 2, 1978 response to the NRC requirements for auxiliary feedwater systems dated September 28, 1979 requires additional information so that we can complete our review. Our request for information is provided in the enclosure to this letter.

On December 11, 1979, we telecopied the attached request for information to your Mr. E. Grehek. The items in the enclosure are numbered to correspond with the recommendation numbering of the NRC requirements for auxiliary feedwater systems at North Anna, Unit No. 1.

We request that your response to the open items in the enclosure be provided to us by December 17, 1979, so that we can complete and issue our auxiliary feedwater system safety evaluation report for North Anna, Unit No. 1.

Sincerely,

A handwritten signature in cursive script, appearing to read "A. Schwencer".

A. Schwencer, Chief  
Operating Reactors Branch No. 1  
Division of Operating Reactors

Enclosure:  
Request for Additional  
Information

1684 095

8001040 241

A. Short Term Recommendations

1. Recommendations GS-4

The licensee's response is acceptable.

2. Recommendation GS-6

The licensee's response is acceptable.

3. Recommendation GS-7

Based on our review of the North Anna 1 FSAR, we concur with the licensee's response that he has verified that the AFW system automatic initiation signals and associated circuitry are safety grade.

B. Additional Short Term Recommendations

1. The licensee's response is partially acceptable but requires resolution of the following open items:

- a) The licensee stated there are two low level alarms associated with the ECST. However, the alarms are both generated by the same transmitter. This does not meet our single failure criterion.

In order to use the AFW pump suction pressure indicators as backup to the ECST level indication and alarm, we require that you provide redundant low level alarms that will alert the operator at least 20 minutes before the ECST will empty assuming the largest AFW pump is operating.

- b) The procedure being modified to instruct operating personnel to monitor AFW pump suction pressure and ECST level indicators should also instruct the operators how to correlate pump suction pressure with ECST level when the pump(s) is operating.

2. The licensee's response indicated a potential conflict between our requirement for a 72-hour endurance test on the turbine driven AFW pump and the 72-hour LCO in Technical Specification 3.7.1.2. The provisions of the attached revised Additional Short Term Recommendation No. 2 should resolve this potential conflict. The licensee should commit to follow the provisions of the attached revised AFW pump endurance test provisions and submit the requested test information.

3. **The** licensee's response to this recommendation was not complete. However, based on information in the North Anna FSAR and in his response dated November 26, 1979, to the NRC (Denton) letter of October 30, 1979, we consider that upon accomplishing the committed power supply modification scheduled for completion before unit startup, the AFW flow indication system will meet safety grade requirements.

4. The licensee's response is acceptable.

C. Long Term Recommendation

1. The licensee's response is acceptable (see A.1 above).

D. Basis for AFW System Flow Requirements

The licensee should provide a commitment date for responding to this information requested in Enclosure 2 of the NRC letter dated September 28, 1979.

Revision to Recommendation No. 2 of "Additional Short Term Recommendations" Regarding Auxiliary Feedwater Pump Endurance Test

The licensee should perform an endurance test on all AFW system pumps. The test should continue for at least 48 hours after achieving the following test conditions:

- Pump/driver operating at rated speed
- and
- Pump developing rated discharge pressure and flow or some higher pressure at a reduced flow but not exceeding the pump vendor's maximum permitted discharge pressure value for a 48-hour test
- For turbine drivers, steam temperature should be as close to normal operating steam temperature as practicable but in no case should the temperature be less than 400°F.

Following the 48-hour pump run, the pumps should be shut down and allowed to cool down until pump temperatures reduce to within 20°F of their values at the start of the 48-hour test and at least 8 hours have elapsed.

Following the cool down, the pumps should be restarted and run for one hour. Test acceptance criteria should include demonstrating that the pumps remain within design limits with respect to bearing/bearing oil temperatures and vibration and that ambient pump room conditions (temperature, humidity) do not exceed environmental qualification limits for safety-related equipment in the room.

The licensee should provide a summary of the conditions and results of the tests. The summary should include the following: 1) A brief description of the test method (including flow schematic diagram) and how the test

was instrumented (i.e., where and how bearing temperatures were measured). 2) A discussion of how the test conditions (pump flow, head, speed and steam temperature) compare to design operating conditions. 3) Plots of bearing/bearing oil temperature vs. time for each bearing of each AFW pump/driver demonstrating that temperature design limits were not exceeded. 4) A plot of pump room ambient temperature and humidity vs. time demonstrating that the pump room ambient conditions do not exceed environmental qualification limits for safety-related equipment in the room. 5) A statement confirming that the pump vibration did not exceed allowable limits during tests.

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